ORANGE MAN6600 SERIES

FEATURES

- High performance nitrogen-doped GaAsP on GaP
- Large, easy to read, digits
- Common anode or common cathode models
- Fast switching — excellent for multiplexing
- Low power consumption
- Bold solid segments that are highly legible
- Solid state reliability — long operation life
- Rugged plastic construction
- Directly compatible with integrated circuits
- High brightness with high contrast
- Categorized for Luminous Intensity (See Note 6)
- Wide viewing angle...150°
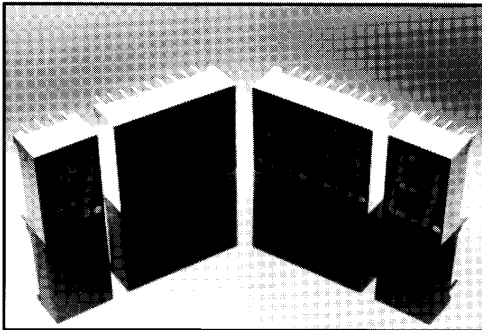- Low forward voltage
- Two-digit package simplifies alignment and assembly

DESCRIPTION

The MAN6600 Series is a family of large digits which includes double and single digits. The series features the sculptured font which minimizes "gappiness" at the segment intersections. Available models include two-digit, one and one-half digits with polarity sign, single digits, and single polarity/overflow digits. All models have right hand decimal points and are available in common anode or common cathode configuration. Units are constructed with Orange face and segment color.

APPLICATIONS

For industrial and consumer applications such as:
- Digital readout displays
- Instrument panels
- Point of sale equipment
- Digital clocks
- TV and radios

MODEL NUMBERS

PART NUMBER	COLOR	DESCRIPTION	PACKAGE DRAWING	PIN OUT SPECIFICATION
MAN6610	Orange	2 Digit; Common Anode; Rt. Hand Decimal	A	A
MAN6630	Orange	1½ Digit; Common Anode; Overflow ±1.8; Rt. Hand Decimal	B	B
MAN6640	Orange	2 Digit; Common Cathode; Rt. Hand Decimal	A	C
MAN6650	Orange	1½ Digit; Common Cathode; Overflow ±1.8; Rt. Hand Decimal	B	D
MAN6660	Orange	Single Digit; Common Anode; Rt. Hand Decimal	C	E
MAN6675	Orange	Single Digit; Common Anode; Overflow ±1.0; Rt. Hand Decimal	D	G
MAN6680	Orange	Single Digit; Common Cathode; Rt. Hand Decimal	C	F
MAN6695	Orange	Single Digit; Common Cathode; Overflow ±1.0; Rt. Hand Decimal	D	H

RECOMMENDED OPTICAL FILTERS

For optimum ON and OFF contrast, one of the following filters or equivalents should be used over the display:

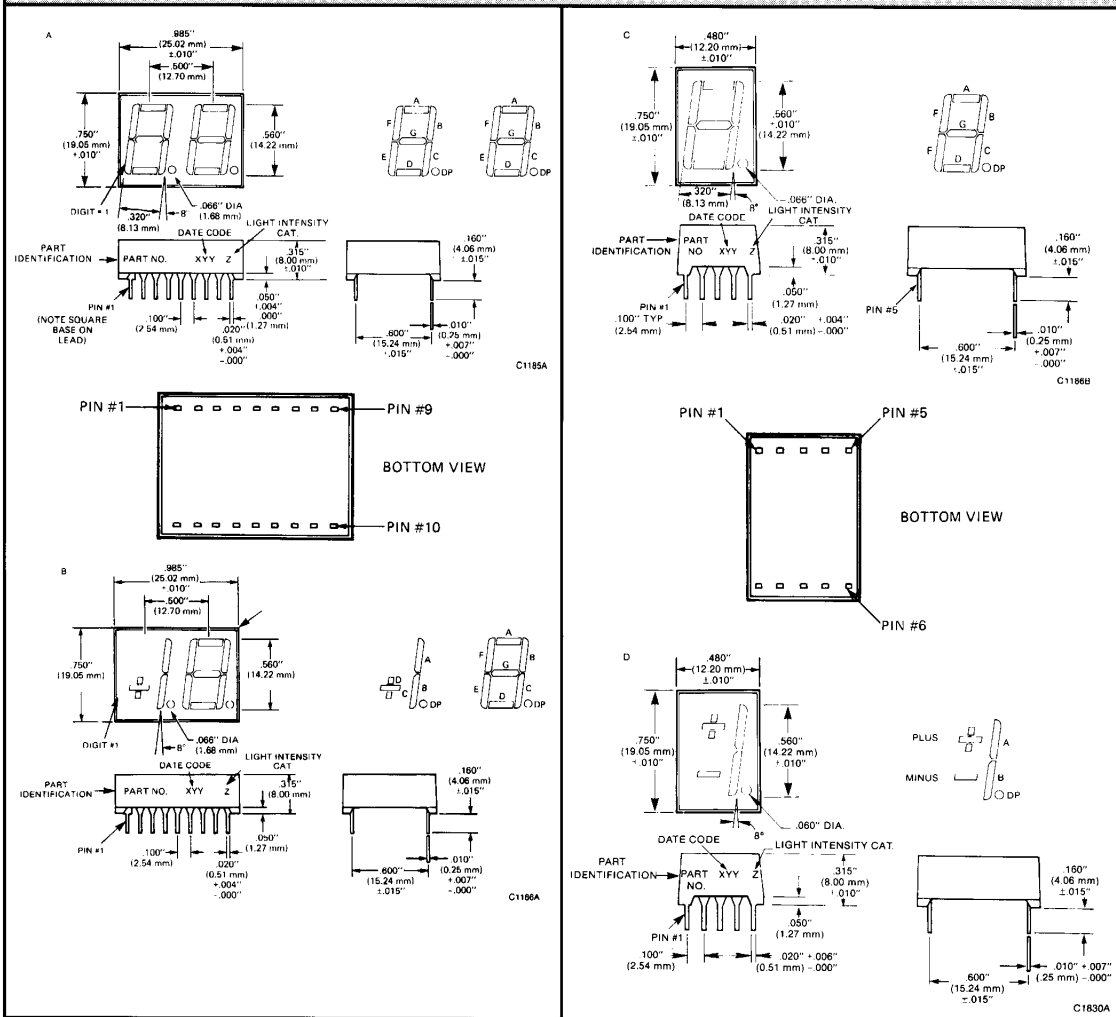| DEVICE TYPE	FILTER
MAN6600 Series	Panelgraphic Scarlet 65 Homalite 100-1670

ELECTRO-OPTICAL CHARACTERISTICS
(Per Diode at 25°C Free Air Temperature Unless Otherwise Specified)

	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Luminous Intensity, digit average (See Note 1)	510	2200		μcd	I_F=10 mA
Peak emission wavelength		630		nm	
Spectral line half width		40		nm	
Forward voltage Segment Decimal point			2.5 2.5	V V	I_F=20 mA I_F=20 mA
Dynamic resistance Segment Decimal point		26 26		Ω Ω	I_F=20 mA I_F=20 mA
Capacitance Segment Decimal point		35 35		pF pF	V=0 V=0
Reverse current Segment Decimal point			100 100	μA μA	V_R=3.0 V V_R=3.0 V
Ratio I_L			2:1	—	I_F=10 mA

ABSOLUTE MAXIMUM RATINGS

	MAN6610 MAN6640	MAN6630 MAN6650	MAN6660 MAN6680	MAN6675 MAN6695
Power dissipation at 25°C ambient.	1200 mW	1050 mW	600 mW	375 mW
Derate linearly from 50°C.	−17 mW/°C	−15.0 mW/°C	−8.6 mW/°C	−5.4 mW/°C
Storage and operating temperature.	−40°C to +85°C	−40°C to +85°C	−40°C to +85°C	−40°C to +85°C
Continuous forward current				
Total.	480 mA	420 mA	240 mA	150 mA
Per segment.	30 mA	30 mA	30 mA	30 mA
Decimal point.	30 mA	30 mA	30 mA	30 mA
Reverse voltage				
Per segment.	6.0 V	6.0 V	6.0 V	6.0 V
Decimal point.	6.0 V	6.0 V	6.0 V	6.0 V
Soldering time at 260°C				
(See Notes 3 and 4)	5 sec.	5 sec.	5 sec.	5 sec.

TYPICAL THERMAL CHARACTERISTICS

Thermal resistance junction to free air Φ_{JA}. . . . . .160°C/W
Wavelength temperature coefficient (case temperature). . . . . .1.0Å/°C
Forward voltage temperature coefficient . . . . −2.0 mV/°C

NOTES

1. The digit average Luminous Intensity is obtained by summing the Luminous Intensity of each segment and dividing by the total number of segments. Intensity will not vary more than ±33.3% between all segments within a digit.
2. The curve in Figure 3 is normalized to the brightness at 25°C to indicate the relative efficiency over the operating temperature range.
3. Leads of the device immersed to 1/16 inch from the body. Maximum device surface temperature is 140°C.
4. For flux removal, Freon TF, Freon TE, Isoproponal or water may be used up to their boiling points.
5. All displays are categorized for Luminous Intensity. The Intensity category is marked on each part as a suffix letter to the part number.

PACKAGE DIMENSIONS

A

.985" (25.02 mm) ±.010"
.500" (12.70 mm)
.750" (19.05 mm) +.010"
.560" +.010" (14.22 mm)
DIGIT = 1
.320" (8.13 mm) — 8°
.066" DIA (1.68 mm)
LIGHT INTENSITY CAT
DATE CODE
PART IDENTIFICATION — PART NO. X.YY Z
.315" (8.00 mm) ±.010"
PIN #1 (NOTE SQUARE BASE ON LEAD)
.100" (2.54 mm)
.020" (0.51 mm) +.004" −.000"
.050" +.004" −.000" (1.27 mm)
.160" (4.06 mm) ±.015"
.600" (15.24 mm) ±.015"
.010" (0.25 mm) +.007" −.000"
C1185A

PIN #1 ———— PIN #9
BOTTOM VIEW
———— PIN #10

B

.985" (25.02 mm) +.010"
.500" (12.70 mm)
.750" (19.05 mm)
.560" (14.22 mm)
DIGIT #1
8°
.066" DIA (1.68 mm)
LIGHT INTENSITY CAT
DATE CODE
PART IDENTIFICATION — PART NO. X.YY Z
.315" (8.00 mm) ±.015"
PIN #1
.100" (2.54 mm)
.020" (0.51 mm) +.004" −.000"
.050" (1.27 mm)
.160" (4.06 mm) ±.015"
.600" (15.24 mm) ±.015"
.010" (0.25 mm) +.007" −.000"
C1186A

C

.480" (12.20 mm) ±.010"
.750" (19.05 mm) ±.010"
.560" +.010" (14.22 mm)
.320" (8.13 mm) 8°
.066" DIA. LIGHT INTENSITY CAT
DATE CODE
PART IDENTIFICATION — PART NO. X.YY Z
.315" (8.00 mm) ±.010"
PIN #1 .100" TYP (2.54 mm)
.020" +.004" (0.51 mm) −.000"
.050" (1.27 mm)
.160" (4.06 mm) ±.015"
PIN #5
.600" (15.24 mm) ±.015"
.010" (0.25 mm) +.007" −.000"
C1186B

PIN #1 ——— PIN #5
BOTTOM VIEW
——— PIN #6

D

.480" (12.20 mm) ±.010"
.750" (19.05 mm) ±.010"
.560" (14.22 mm) +.010"
.060" DIA.
DATE CODE
8°
LIGHT INTENSITY CAT.
PLUS A
MINUS B
DP
PART IDENTIFICATION — PART NO. X.YY Z
.315" (8.00 mm) ±.010"
PIN #1
.100" (2.54 mm)
.020" +.006" (0.51 mm) −.000"
.050" (1.27 mm)
.160" (4.06 mm) ±.015"
.600" (15.24 mm) ±.015"
.010" +.007" (.25 mm) −.000"
C1830A

ELECTRICAL CONNECTIONS

Pin No.	A MAN6610	B MAN6630	C MAN6640	D MAN6650	E MAN6660	F MAN6680	G MAN6675	H MAN6695
1	E Cath. (#1)	C Cath. (#1)	E An. (#1)	C An. (#1)	E Cath.	E An.	Minus Cath.	Minus An.
2	D Cath. (#1)	D Cath. (#1)	D An. (#1)	D An. (#1)	D Cath.	D An.	Com. An. ±	Com. Cath. ±
3	C Cath. (#1)	B Cath. (#1)	C An. (#1)	B An. (#1)	Com. An.	Com. Cath.	Seg. B Cath.	Seg. B An.
4	DP Cath. (#1)	DP Cath. (#1)	DP An. (#1)	DP An. (#1)	C Cath.	C An.	Com. An. A, B, DP	Com. Cath. A, B, DP
5	E Cath. (#2)	E Cath. (#2)	E An. (#2)	E An. (#2)	DP Cath.	DP An.	DP Cath.	DP An.
6	D Cath. (#2)	D Cath. (#2)	D An. (#2)	D An. (#2)	B Cath.	B An.	Seg. A Cath.	Seg. A An.
7	G Cath. (#2)	G Cath. (#2)	G An. (#2)	G An. (#2)	A Cath.	A An.	Com. An. A, B, DP	Com. Cath. A, B, DP
8	C Cath. (#2)	C Cath. (#2)	C An. (#2)	C An. (#2)	Com. An.	Com. Cath.	Com. An. ±	Com. Cath. ±
9	DP Cath. (#2)	DP Cath. (#2)	DP An. (#2)	DP An. (#2)	F Cath.	F An.	Plus Cath.	Plus An.
10	B Cath. (#2)	B Cath. (#2)	B An. (#2)	B An. (#2)	G Cath.	G An.	N.C.	N.C.
11	A Cath. (#2)	A Cath. (#2)	A An. (#2)	A An. (#2)				
12	F Cath. (#2)	F Cath. (#2)	F An. (#2)	F An. (#2)				
13	Digit #2 An.	Digit #2 An.	Digit #2 Cath.	Digit #2 Cath.				
14	Digit #1 An.	Digit #1 An.	Digit #1 Cath.	Digit #1 Cath.				
15	B Cath. (#1)	A Cath. (#1)	B An. (#1)	A An. (#1)				
16	A Cath. (#1)	N.C.	A An. (#1)	N.C.				
17	G Cath. (#1)	N.C.	G An. (#1)	N.C.				
18	F Cath. (#1)	N.C.	F An. (#1)	N.C.				

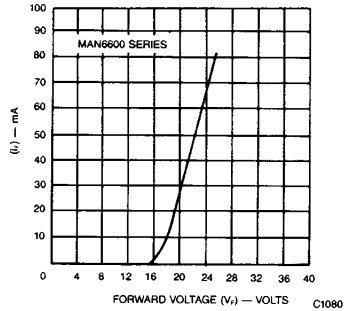## TYPICAL CHARACTERISTIC CURVES
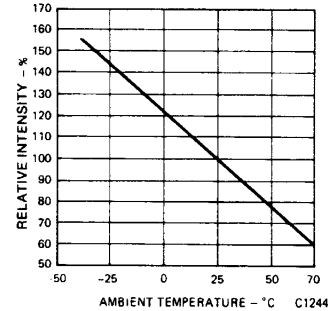

Fig. 1. Forward Current vs.
Forward Voltage

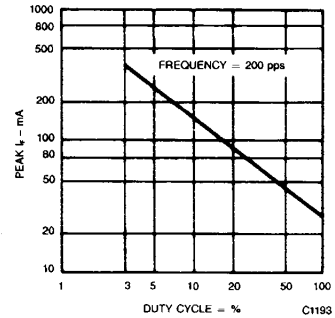Fig. 2. Relative Luminous Intensity
vs. Temperature
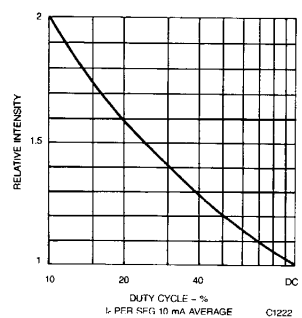(see Note 2)

Fig. 3. Max Peak Current vs.
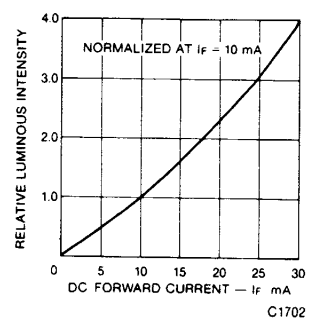Duty Cycle

Fig. 4. Luminous Intensity vs.
Duty Cycle

Fig. 5. Relative Luminous Intensity vs.
Forward Current

INTERNAL CONNECTIONS

MAN6610   C1195

MAN6630   C1196

MAN6640   C1197

MAN6650   C1198

MAN6660   C1238

MAN6680   C1239

MAN6675   C1828

MAN6695   C1829